

Palumbo, Janice

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From: Maley, Timothy
Sent: Thursday, January 11, 2018 11:32 AM
To: Palumbo, Janice
Cc: Fuentes, Rene
Subject: JH Baxter

As a follow up to our meeting back in December, I reviewed recent documents (EPA Optimization Memo [Sept 2016], GSI Tech Memo [Dec 2016], CMS-Rev 4 [April 2017], and SADD 2017 [Dec 2017]) and offer the following observations/comments with regard to the proposed Remedial Alternatives.

- I agree with GSI that the Site appears adequately characterized to move forward with a more aggressive source remediation activities.
- The biotreatment/recirculation pilot study system seems effective at controlling migration of contaminants in groundwater. Based on monitoring data, the concentrations of PCP in groundwater seem fairly stable with some evidence of reductions. Additional future monitoring data is necessary to support these observations.
- Regardless of the NAPL density, the PCP product/dissolved plume appears vertically distributed in the vadose zone (smear zone) and underlying aquifer to depth. The NAPL does not appear to be readily mobile. However, the vertical extent of contamination (as indicated on cross-sections Figs 38-42) does not appear to be adequately delineated, but this should not impede proceeding with additional remedial actions. Any residual NAPL should be considered a significant source area. The PCP plume configuration (as stated by GSI) is consistent with the downward groundwater flow gradient at the Site and not density driven.
- What ever happened to the additional LNAPL recovery wells LRW-1, 2, and 3?
- Revision 4 of the CMS adequately addresses the comments, letters and meetings conducted in 2016.
- The nearest drinking water well is approximately 3,600 feet from the leading edge of the Site plume. According to the latest groundwater sampling data (Sept 2017), the furthest impacted groundwater well from the source area is MW-18 (PCP at 23 ug/L), and only one monitoring point MW-43 exists beyond that.
- As presented in the GSI rebuttal Tech Memo and the CMS (Rev 4), the preferred remedial alternative is to Enhance the Biodegradation Recirculation System (Alternative 4), which would include; utilizing the existing enhanced biodegradation recirculation system augmented by active free product recovery (MW-12), installation of an enhanced biodegradation recirculation system in the known NAPL area, downgradient oxygen infusion, implementation of ICs, and MNA.

The technical criteria of each Alternative presented in the CMS all appear potentially effective in helping achieve the Site CMOs. Alternative 3 involving excavation and off-Site disposal would obviously be the most effective and efficient at reducing/eliminating the source area, but could result in a greater volume of waste materials for disposal (uncontrolled costs) and would severally impact ongoing facility operations. Alternative 5 involving ERH would also seem effective at significantly reducing/eliminating the source area, but for similar reasons as Alternative 3, the cost associated with this technology could be exorbitant and facility operations would be impeded. Since the main components of Alternative 4 are already in place, and based on the ongoing monitoring data, this technology appears sufficient in controlling contaminant migration and reducing concentrations of PCP in downgradient groundwater. Therefore, augmenting this system seems the most cost effective at this time. During the implementation of the remedial alternative, evaluation of

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performance monitoring data will help assess whether additional migration and/or increasing concentrations of contaminants in groundwater are occurring, and if so a contingent remedial alternative must be re-evaluated.

Recommendations for Alternative 4:

- Monitor effectiveness of LNAPL recovery in MW-12. Consider additional recover efforts where measureable LNAPL exists. Develop and implement a contingency plan for LNAPL recovery should the skimmer prove ineffective.
- Consider additional wells near the leading edge of the plume between MW-18 and MW-43, and possible beyond MW-43 should future groundwater data indicate impacted groundwater reaching MW-43.
- Develop an O&M plan for the implementation of the Alternative, including contingencies (if necessary) based on evaluations of the performance monitoring data.

Feel free to contact me if you have any question or concerns regarding my review of the existing documentation and/or my assessment of the remedial alternative as presented in the most recent CMS report.

- Tim

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